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An Outbreak of Burkholderia Cepacia Complex Septicaemia in Pediatric Ward of a Tertiary Care Hospital, North Kerala

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ABSTRACT

Burkholderia (previously Pseudomonas) isa Gram negative bacilli commonly found in soil and moist environments [1]. Small hospital outbreaks due to a single contaminated source suchas a disinfectant, intravenous solutions, nebulizer solutions, mouthwash and medical devices including respiratory-therapy equipment [1]. In our hospital, we had 3 reported cases of hospital acquired bloodstream infections caused by Burkholderia species from the pediatric ward. An outbreak investigation was conducted by the Hospital Infection Controlcommittee. The source was identified as distilled water used for nebulization in the pediatric ward.

Key Words: *Burkholderia Cepacia Complex Septicaemia*

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INTRODUCTION

Burkholderia cepacia complex (BCC) is an opportunistic pathogen in hospitalized and immunocompromised patients [2]. A variety of human infections caused by BCC include bacteremia, septic arthritis, urinary tract infections, peritonitis and respiratory tract infections [2, 3]. The high level of intrinsic resistance in this organism, coupled with the lack of newer or effective antibiotics, makes treatment options very difficult [2]. They are also able to survive in the environment for prolonged periods with limited nutrition. They are widely distributed in natural habitats such as soil, water [3] and nutrient poor water [4]. B.cepacia was frequently found in nosocomial outbreaks due to contaminated disinfectants [5, 6], nebulizer solutions [7], mouth wash [8], medical devices, intravenous solutions [9, 10] due to contamination of lipid emulsion stoppers [11]. Reports of pseudo- bacteremia due to BCC has also appeared in the literature [12]. However, reports on outbreaks due to this organism from the Indian subcontinent is lacking.

We report an outbreak due to BCC which has occurred in the pediatric ward of our institute, probable source being distilled water usedfor nebulization.

CASE REPORTS

Case1

One year old male child, known case of hyper IgM syndrome, recurrent pneumonia admitted in pediatric ward with fever cough and respiratory distress. Blood culture sample was sent on third day of admission. Culture came positive for B.cepacia, sensitive to Cotrimoxazole, Ciprofloxacin, Levofloxacin, Piperacillin-Tazobactam. Patient was started on Piperacillin -Tazobactam symptomatically improved and got discharged.

Case2

One year old female child admitted in pediatric ward due to kerosene poisoning. On third day of admission patient developed febrile episodes and lethargy. Blood culture grew B.cepacia, sensitive to Cotrimoxazole, Ciprofloxacin, Levofloxacin, Piperacillin-Tazobactam. Patient was started on Levofloxacin symptoms subsided and got discharged.

Case3

One year old male child a case of bronchitis admitted in pediatric ward. On third day hedeveloped high grade fever and blood culture was sent. Culture came positive for B.cepacia, sensitive to Cotrimoxazole, Ciprofloxacin, Levofloxacin, Piperacillin-Tazobactam. Patient was started on Piperacillin -Tazobactam, symptomatically improved and got discharged.

Microbiological analysis

From the pediatric ward within a period of two weeks three blood culture samples camepositive. Gram stain was

done showed Gram negative bacilli, motile by hanging drop. On blood agar non hemolytic opaque glistening colonies and non-lactose fermenting colonies on MacConkey agar. Biochemical reactions- Organism isolated was catalase positive, oxidasepositive, citrate utilized, lysine decarboxylated and resistant to Polymyxin B and Colistin, hence confirmed as Burkholderia cepacia complex.An outbreak was suspected and strict infection control measures were instituted to prevent the spread of infection. With the help of HAC environment sampling was done to identify the source of infection. Samples were taken from distilled water used in humidifiers, tap waterand water from purifier. Burkholderia cepacia was isolated from distilled water used inhumidifiers which had the same antibiotic susceptibility pattern as that of the blood culture isolates.

DISCUSSION

Burkholderia (previously Pseudomonas) is a gram negative bacilli commonly found in soil and moist environments [1]. Small hospital outbreaks due to a single contaminated source such as a disinfectant, intravenous solutions, nebulizer solutions, mouthwash and medical devices including respiratory-therapy equipment [1]. In our scenario we suspected an outbreak in the pediatric ward and HIC team collected probable samples. Source of infection was traced out to be to distilled water used inhumidifiers. Isolates from patients and environmental samples belong to same biotype and exhibited same antibiogram. From the detailed history obtained of above said cases we found that they were given humidifiers as part of management. The distilled water that is used in humidifiers was taken from purchase section in a five liter can which was being used for more than 48 hours.After the outbreak was reported, distilled water can from which the organism was isolated was discarded immediately and was advised to replace it with one liter cans. Nursing staff and attenders were educated about proper storage and handling of distilled water andproper cleaning of humidifiers after each use. From the light of our study, we came to the conclusion that Burkholderia cepacia is a potential threat to cause outbreaks in a hospital setting. Hence the need for routineenvironmental sampling is a must for preventing outbreaks. Strict hand hygiene measures as well as periodic education of staffs must be practiced for effective infection control.

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Nil.

CONFLICT OF INTEREST

There are no conflicts of interest

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